ALGEBRA.

129. Proposed by F. ANDEREGG, A. M., Professor of Mathematics, Oberlin College, Oberlin, Ohio.

Prove that

$$\begin{vmatrix} 1-\binom{m-1}{0}-\binom{m-1}{1}\cdots\binom{m-1}{m-2} \\ 1 \quad 1 \quad -\binom{m-2}{0}\cdots\binom{m-2}{m-3} \\ 1 \quad 0 \quad 1 \quad \cdots\binom{m-3}{m-4} \\ \cdots\cdots\cdots\cdots\cdots\cdots \\ 1 \quad 0 \quad 0 \quad 1 \quad \binom{1}{0} \\ 1 \quad 0 \quad 0\ldots.0 \quad 1 \end{vmatrix} \quad e=\sum_{n=\infty}^{n=1}\frac{n^m}{n!}, \text{ where } \binom{m-2}{k}=\frac{(n-2\ldots(m-k-1)}{k!}.$$

130. Proposed by J. M. BOORMAN, Woodmere, N. Y.

Solve $x^5-y^5=2101\ldots.(1)$, $x-y=1\ldots.(2)$.

Find general formula for (1), ...(2), when $x^n-y^n=a$; for $n_0=3$; $n_1=5$; $n_2=7$; etc.

131. Proposed by HARRY S. VANDIVER. Bala, Montgomery County. Pa.

It is well known that, when we define the symbol $\sqrt[n]{a}$ after the manner of elementary text-books on algebra, certain *irrational equations* may be written down which have no real or imaginary roots. Required then, the condition, if any, between a, b, c, and d such that the equation, $ax+b+\sqrt{(cx^2+d)}=0$, shall have no root, real or or imaginary.

*** Solutions of these problems should be sent to J. M. Colaw not later than April 10.

GEOMETRY.

146. Proposed by H. R. HIGLEY, M. Sc., Professor of Mathematics, Normal School. East Stroudsburg, Pa.

If the opposite sides of a quadrilateral inscribed in a circle be produced to meet, the square on the line joining the points of concurrence=the sum of the squares on the two tangents from these points. Ex. 24, page 219, Mackay's *Elements of Euclid.*

147. Proposed by R. A. WELLS, Professor of Mathematics, Franklin College, New Athens, Ohio.

Find the locus in space of the point which is equally illuminated by each of two unequal lights whose intensities are a and b ($a>b$), placed at a distance c from each other.

160. Proposed by G. B. M. ZERR, A. M., Ph. D., Professor of Chemistry and Physics. The Temple College, Philadelphia, Pa.

Let GFH be the spherical triangle formed by joining the mid-points of the sides of the spherical triangle ABC; E the spherical excess of ABC; β, p the base and altitude of GFH. Prove $\sin\frac{1}{2}E=\sin\beta\sin p$.

*** Solutions of these problems should be sent to B. F. Finkel not later than April 10.

CALCULUS.

123. Prize Problem. Proposed by B. F. FINKEL, A.M., M.Sc., Professor of Mathematics and Physics, Drury College, Springfield, Mo.

Find in finite terms, the value of $\int_0^{\frac{1}{4}\pi}\log\tan\phi\,d\phi$.

A year's subscription to the MONTHLY will be given to the person sending to the Proposer the first solution of this problem. This problem was misstated in last issue.

124. Proposed by JOHN M. COLAW, A. M., Monterey, Va.

Show that the cardioides $r=a(1+\cos\theta)$....(1), and $r=b(1-\cos\theta)$....(2), intersect at right angles.

125. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in Irving College, Mechanicsburg, Pa.

Show that the *complete primitive* of the Differential Equation

$$\left[\tan^{-1}(x)-\frac{x}{1+x^2}\right]\frac{d^2y}{dx^2}=2\left(\frac{x}{(1+x^2)^2}\right)\left[x\frac{dy}{dx}-y\right],$$

is $y=C\tan^{-1}(x)+cx$.

*** Solutions of these problems should be sent to J. M. Colaw not later than April 10.

EDITORIALS.

Dr. C. N. Little, professor of Mathematics in Leland Stanford University, has resigned his position.

Mr. S. W. Reaves, graduate scholar in Cornell University, has been appointed instructor in Mathematics at Orchard Lake Military Academy.

Professor Charles Hermite, the venerable dean of French mathematicians, died after a brief illness at his home in Paris, on January 14, 1901, and in his death the mathematical world sustains a great loss. He was born at Dieuze, December 25, 1822. In 1858, 1865, 1866, his transcendental solution of the quintic equation involving elliptic integrals was published in the *Comptes Rendus*. The theory of Differential Equations, the reduction of Abelian to Elliptic Functions, the Theory of Functions, and many other mathematical subjects, have received substantial additions at the hands of this great savant.

BOOKS AND PERIODICALS.

The Teaching of Mathematics in the Higher Schools of Prussia. By J. W. A. Young, Ph. D., Assistant Professor of the Pedagogy of Mathematics in the University of Chicago. 8vo. Cloth, 141 pages. Price, 80 cents. New York: Longmans, Green & Co.

The account of the Prussian High School System with detailed and specific description of the work in mathematics as set forth in this little volume is most timely—coming as it does at the close of the 19th century, the last part of the last twenty-five years of which has witnessed great changes and improved methods in mathematical teaching in America. There is still room for great improvement along the line and just at present great pressure is being brought to bear on mathematical teaching in colleges by the great universities, the colleges in turn are demanding a better quality of work in mathematics of the high school, and it is hoped that the result will be general improvement all along the line of mathematical teaching.

Dr. Young has gathered much of the material for the account respecting the Prussian Higher School System by personal observation, and in this account are to be found much that is of highest value to American teachers. All teachers in America who have been the subjects of political intrigue and personal whims rejoice to know that the German teacher works with a sense of security in his position without regard to political occurrences, or the whims of the powerful and influential, security in a modest compe-